

Chapter 2: Alternatives

2.1 NO BUILD ALTERNATIVE

The No Build Alternative includes capital improvements necessary to maintain the existing corridor (e.g., resurfacing the roadway). The No Build Alternative does not include major or minor reconstruction projects. For example, it does not include adjustments to the horizontal or vertical alignment, nor widening of the roadway surface for increased shoulders, curb and gutter, sidewalks, or additional travel lanes.

The typical section associated with the No Build Alternative is illustrated in **Figure 2-1**. The No Build Alternative does not meet the safety and operational aspects of the project's purpose and need. The No Build Alternative does not provide the necessary capacity improvements that would allow SR-68 to function as a major arterial and serve the cities of Woods Cross and West Bountiful through the 2030 design year. Traffic conditions associated with the No Build Alternative are compared to the Transportation System Management (TSM) Alternative and Build Alternative in **Section 2.4.3**. Under the No Build Alternative, the project corridor would experience LOS D conditions, especially in the northbound/eastbound direction, and most intersections would operate at LOS F. The No Build Alternative also does not address access management or provide for the separation of turning movements from through traffic. The No Build Alternative does not correct deficient cross slopes, shoulders, clear zones, and pavement conditions that would increase the safety of the motorists, pedestrians, and bicyclists using the corridor. Drainage problems would also continue to exist.

The No Build Alternative would not satisfy the identified need for a safe and efficient facility with connections to neighboring major transportation facilities. Shoulders and sidewalks would not be made consistent; thus forcing bicyclists and pedestrians to use the travel lanes. The cities of Woods Cross and West Bountiful view this area as the gateway to their communities, especially with the pending construction of the Legacy Parkway and Commuter Rail. Congestion and deficient geometric features detract from the gateway objective. Funding and implementation of other aesthetic treatments could be explored independently by the cities.

Although this alternative does not meet the purpose and need or other project objectives, it is progressed as an alternative in accordance with the National Environmental Policy Act (NEPA) requirements to serve as a baseline against which other alternatives are evaluated and compared. The environmental consequences of the No Build Alternative are compared with those of the Build Alternative in Chapter 3.

2.2 TRANSPORTATION SYSTEM MANAGEMENT (TSM)

The TSM Alternative assumed SR-68 would remain with one travel lane in each direction; however, other transportation system improvements such as adding turning lanes, extending turn pockets, intersection signalization, signal timing optimization, traffic channelization, and access management measures were included in this scenario. This scenario maximizes operations at intersections along the corridor without adding additional lane capacity. This scenario was considered with and without a UPRR grade separation. Traffic conditions associated with the TSM Alternative are compared to the No Build and Build Alternative in **Section 2.4.3**. The traffic conditions under this scenario do not measurably improve. Intersection and railroad crossing improvements provide slightly less delay at the intersections, but the majority of intersections would continue to operate at LOS F. The travel speed along the corridor under this scenario does not appreciably increase, since no new capacity is introduced. Geometric and drainage deficiencies outlined in the No Build would remain with the TSM Alternative. For these reasons, this alternative alone does not meet the purpose and need or other project objectives. However, applicable elements of the TSM alternative are included the Build Alternative as described in **Section 2.4**.

2.3 BUILD ALTERNATIVE DEVELOPMENT PROCESS

This section summarizes the development and evaluation of the full range of alternatives that were considered in accordance with the NEPA and FHWA guidelines. The SR-68, 2600 South to I-15 in Davis County Alternative Development Report (H.W. Lochner, 2006, included as **Appendix D**) provides a more detailed summary of the decision process and describes each conceptual alternative considered.

Suggested solutions for the corridor were obtained from the following sources:

- Public comments received from individual stakeholders during one-on-one interviews;
- Comments collected at a public open house and from project area residents and businesses;
- Suggestions from the previous 500 South Corridor Needs Assessment performed in 2004;
- Input received from resource agencies; and
- Technical analyses of the corridor needs and engineering concepts to meet those needs.

Conceptual alternatives were developed from the suggested solutions and the flow chart for the Build Alternative development and screening process (**Figure 2-2**) outlines the steps that were followed. Suggested solutions that would not meet the purpose and need for the project by themselves were individually eliminated from further consideration; however, when appropriate, these solutions were combined with other solutions. The objective of the Build Alternative development and screening process was to develop Build Alternative(s) that would best meet the project purpose and need, as well as other objectives.

The first decision in the development of the Build Alternative was to provide and analyze conceptual alternatives that would improve capacity and mobility. This process included both at-grade and grade separated crossing scenarios for the UPRR, with and without additional capacity throughout the corridor. The SR-68, 2600 South to I-15 in Davis County Alternative Development Report (H.W. Lochner, 2006, included as **Appendix D**) provides more detail about the capacity and grade separation scenarios considered. The SR-68, 2600 South to I-15 in Davis County Traffic Report (Fehr & Peers Associates, Inc., 2006, included as **Appendix B**) provides further detail regarding traffic operations of both the at-grade and grade-separated crossings, with and without capacity improvements. The grade-separated crossing was not advanced further because the at-grade crossing was able to address the purpose and need objectives with fewer impacts associated with property access, utilities, and relocations.

Once these decisions were made, the appropriate ROW typical section width was determined and the horizontal alignment identified. Additional project objectives were considered during this process, including the ability to serve as an asset to the cities of West Bountiful and Woods Cross.

2.4 BUILD ALTERNATIVE

2.4.1 Description

As illustrated in **Figures 2-3** through **2-6**, the Build Alternative includes a five-lane corridor with at-grade crossings of the UPRR/Commuter Rail and D&RGW lines, within a 110-foot ROW typical section along a meandered alignment. Turn lanes, extended turn pockets, intersection signalization, signal timing, and access management, as included in the TSM Alternative, are also included in the Build Alternative. Between 800 West and 700 West, to minimize impacts in this tightly constrained section of the corridor, there is an option for a 94-foot ROW typical section (illustrated in **Figures 2-3** and **2-6**). The 94-foot ROW Option provides the same operational capacity benefits as the 110-foot ROW but only accommodates four-foot shoulders.

2.4.2 Design Features

As shown in **Figure 2-3**, the 110-foot ROW includes four 12-foot travel lanes (two lanes in each direction of travel), a 14-foot median, as well as 12-foot shoulders, curb and gutter, park strip, sidewalk, and one-foot of ROW behind the sidewalk on each side. With the 94-foot ROW Option, shoulders would be reduced to four feet.

Fully gated at-grade crossings with lights would be provided for the UPRR/Commuter Rail and D&RGW railroad crossings. The lights would warn motorists on 500 South of approaching trains and the gates would prevent motorists and pedestrians from crossing the tracks when trains are approaching or crossing.

The meandered alignment would shift the alignment centerline to different horizontal locations to minimize impacts to adjacent land uses and historic properties. For example, the alignment was shifted to one side of the corridor to minimize greater impacts on the opposite side.

Geometric improvements would correct deficient cross slopes, shoulders, clear zones, and pavement conditions to increase the safety of the motorists, pedestrians, and bicyclists using the corridor. These geometric improvements would better define the roadway, and improvements such as increased curb radii would better accommodate turning movements of large vehicles at intersections.

Drainage problems would also be corrected through the development of a storm drainage system. The storm drainage system would collect runoff by curb and gutter into catch basins, and transmit runoff by a pipe network into detention basins throughout the project corridor. Flow from the detention basins would be regulated based on municipal standards.

The Build Alternative would comply with applicable recommendations of the access management plan for SR-68, which is in the process of being developed separately by the cities of Woods Cross, West Bountiful, and UDOT. A Context Sensitive Committee (CSC) would also be organized during design that would consist of representatives from UDOT, municipalities, citizens, and businesses to provide input on median and shoulder area treatments. Shoulder area treatments not only include aesthetic treatments, but may also consider variations in the park strip and sidewalk location. Some possible concepts for median treatments are shown in **Figure 2-4**.

2.4.3 Traffic Operations

Traffic conditions associated with the Build Alternative during the PM peak hour are compared to the No Build and TSM Alternatives in **Tables 2.4-1** through **2.4-3**. The Build Alternative achieves the purpose and need objectives and provides the best traffic operations for SR-68 without a grade separation of the UPRR crossing. Compared to existing delay, motorists may experience a greater delay at intersections when a train is crossing, but the five-lane typical section would provide acceptable corridor and intersection LOS during the PM peak hour through the year 2030. For more in-depth information about why a grade-separated crossing was dismissed as an alternative for this project, please refer to the SR-68, 2600 South to I-15 in Davis County Traffic Report (Fehr & Peers Associates, Inc., 2006, included as **Appendix B**), as well as the SR-68, 2600 South to I-15 in Davis County Alternative Development Report (H.W. Lochner, 2006, included as **Appendix D**).

TABLE 2.4-1: LOS AND DELAY - PM PEAK HOUR

Intersection	<i>Existing</i>	<i>2030 No Build^{1,3}</i>	<i>2030 TSM¹</i>	<i>2030 Build</i>
	LOS / Delay ²	LOS / Delay ²	LOS / Delay ²	LOS / Delay ²
I-15 SB Ramps / 500 South	D / 37.0	C / 31.9	D / 38.2	D / 35.6
700 West / 500 South	C / 18.5	F / >50.0	D / 49.5	B / 16.7
800 West / 500 South	D / 29.1	F / >50.0	E / 76.8	C / 34.2
1100 West / 500 South	B / 12.5	F / >50.0	F / >80.0	B / 13.8
Redwood Road / 500 South	N/A	C / 26.2	C / 30.1	B / 17.5
1500 South / Redwood Road	A / 4.1	A / 8.3	B / 16.1	A / 8.6
2600 South / Redwood Road	B / 12.4	F / >80.0	F / >80.0	B / 13.3

Notes:

Bold text indicates unacceptable intersection operations.

1) No Build and TSM scenarios generally service less than 90 percent of the traffic demand. Levels of service are in reality worse than those reported by SimTraffic.

2) Delay = seconds per vehicle

3) Except for the future Redwood Road / 500 South intersection, the SR-68 intersections between 700 West and 2600 South are not signalized under the No Build condition.

Source: Fehr & Peers Associates, Inc., 2006

TABLE 2.4-2: TRAVEL TIMES - PM PEAK HOUR

Direction	<i>Existing</i>	<i>2030 No Build</i>	<i>2030 TSM</i>	<i>2030 Build</i>
Northbound / Eastbound	6:40 min	9:13 min	12:47 min	7:19 min
Westbound / Southbound	4:54 min	8:14 min	8:58 min	6:27 min

Note: The travel time increases in the TSM scenario because signals were added. The added signals improve service to side-streets, but cause more through delay.

Source: Fehr & Peers Associates, Inc., 2006

TABLE 2.4-3: NETWORK WIDE DELAY - PM PEAK HOUR

Scenario	<i>Existing</i>	<i>2030 No Build</i>	<i>2030 TSM</i>	<i>2030 Build</i>
Network Wide Delay	68	320	247	65
Note: Delay = seconds per vehicle Source: Fehr & Peers Associates, Inc., 2006				

2.4.4 Comparison of 110-foot ROW to 94-foot ROW Option

The 12-foot shoulder widths associated with the 110-foot ROW would meet the objectives outlined by AASHTO for well-designed shoulders (AASHTO, 2004). The 12-foot shoulders would provide a place for a vehicle to stop because of mechanical difficulties or emergencies and to conduct evasive maneuvers to avoid potential crashes. They would provide a sense of openness that would contribute to driver comfort, as well as improve sight distance and lateral clearance from obstructions, thereby increasing safety. The 12-foot shoulders would provide space for maintenance operations (e.g., snow removal and storage) and allow for safer use by bicycles, pedestrians, mail delivery, and buses. Additionally, the 12-foot shoulder would accommodate deceleration associated with turning movements. The cost of 110-foot ROW between 800 West and 700 West would be approximately 1.5 times the cost of the same section of SR-68 with the 94-foot ROW Option.

The 94-foot ROW Option provides a context sensitive solution for the tightly constrained section of the project between 800 West and 700 West. The primary benefit of this option is that it decreases the total number of business relocations from five to one, eliminating all four potential business displacements in this section, and reduced utility conflicts. This option has the same operational capacity benefits as the 110-foot ROW because the number of travel lanes is the same. However, since only the minimum AASHTO guidance for shoulder width is achieved between 800 West and 700 West, the benefits provided by the shoulders in this short section are limited under the 94-foot ROW option (see previous paragraph for an explanation of the benefits of shoulders). Additionally, this option also does not match the UDOT Region One guidance for shoulder width and does not accommodate the typical section width outlined in city plans.

2.4.5 Preferred Alternative

The Preferred Alternative is the 110-foot ROW with the 94-foot ROW Option between 800 West and 700 West. The 94-foot ROW Option was selected because it provides a context sensitive solution for the tightly constrained section of the project between 800 West and

700 West. As explained in **Section 2.4.4**, the 94-foot option for this short section of roadway has the same operational capacity benefits as the 110-foot ROW, eliminates four business displacements, and reduces utility conflicts.

2.5 SUMMARY

The No Build and TSM Alternatives are unable to allow SR-68 to function as a major arterial and serve the cities of Woods Cross and West Bountiful through the 2030 design year. As a result, a Build Alternative is needed to provide a transportation facility that meets the stated purpose and need and additional project objectives outlined in **Section 1.4**. The Build Alternative development process (explained in **Section 2.3**) formulated the Build Alternative that is analyzed in detail in **Chapter 3**, along with the No Build Alternative. The No Build Alternative includes a two-lane corridor with at-grade crossings of the UPRR/Commuter Rail and D&RGW lines.

The Build Alternative is illustrated in **Figures 2-3** through **2-6** and includes a five-lane corridor with at-grade crossings of the UPRR/Commuter Rail and D&RGW lines within a 110-foot right-of-way typical section along a meandered alignment. Between 800 West and 700 West there is an option for a 94-foot ROW typical section to minimize impacts in this tightly constrained section of the project corridor. The 94-foot ROW Option has the same operational capacity benefits as the 110-foot ROW since the number of travel lanes are the same. However, the benefits provided by the shoulders in this short section are limited under this option.

The Preferred Alternative is the 110-foot ROW with the 94-foot ROW Option between 800 West and 700 West.

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